

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES
FOURTH SERIES

VOL. XVII, No. 3, pp. 67-87

JUNE 22, 1928

III
A KEY TO THE SPECIES OF EUCALYPTUS
GROWN IN CALIFORNIA

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INTRODUCTION

Of California's cultivated trees the most striking are easily the several species of *Eucalyptus*. Their towering, serried ranks dominate the landscape and lend it an unique, exotic flavor totally lacking in other parts of the United States. While about the only kind generally seen and planted today is the ubiquitous Blue Gum, *Eucalyptus globulus*, a great many other species were tried during the perhaps over-optimistic boom of some years ago. That not more of the latter were successful may well have been due to a choice of unsuitable species, resulting from a failure to properly appreciate the diversity of Australia's climate, which is by no means all dry, but in parts fairly moist, particularly in the regions producing the more important timber-eucalypts. It would seem reasonable to suppose, though, that in a genus spread throughout Australia, and now recognized to contain over 350 species, some might be found suited to almost any of the climatic, soil and moisture conditions existing in California. Before doing any further planting, or proceeding to the introduction of other species, it is desirable to know just

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what species are to be found here now, and what is their relative status. To make this exact knowledge possible it is necessary to determine correctly the species, preferably in the field. This has been rather difficult with the available keys, which last are often unsatisfactory, either because they do not include all the forms grown here, or through not being in accord with the latest works on the genus, or through the use of obscure characters. The need of an easily workable key is what this short paper attempts to meet. In choosing characters for the primary division of the genus, obviousness has been considered as more important than constancy. The resulting inevitable repetition is a necessary weakness of all artificial keys and need occasion no surprise in view of the extreme variability of the genus.

The species and forms treated here are those actually growing in California today, and more particularly in Golden Gate Park, San Francisco, on the University Campus at Berkeley, and at the former Experiment Station at Santa Monica. Special consideration has been given the material contained in the collections of the California Academy of Sciences, the University of California, and that of Prof. W. Metcalf. Some species are represented in these collections by single specimens, from a single locality, often of fragmentary material, and since their treatment here would have complicated the key unnecessarily, without serving any useful purpose, the writer has used his own judgment as to whether to include them or not. The test adopted governing the inclusion of a species is, as a rule, the continued existence of at least one tree that has borne flowers and fruit. While additional species are reported, and new ones are continually being introduced, their exact identity must remain doubtful until they flower and fruit; in the meantime it is best to disregard them.¹

In the present paper the writer has followed as closely as possible the comprehensive work, "A Critical Revision of the Genus *Eucalyptus*," by the late J. H. Maiden. For a list of other works consulted the appended bibliography is referred to.

¹See list on page 26.

It is too much to expect these lines to be entirely free of errors. Any criticism will be welcome, as will also any doubtful or new material. The writer will gladly determine any specimens that may be sent to him at the California Academy of Sciences, San Francisco. Material sent should consist, if possible, of buds, flowers, fruits, leaves and bark.

The writer wishes to express his appreciation of the kind help given by many friends, particularly Miss Alice Eastwood, without whose encouragement and help the work would scarcely have been possible.

EUCALYPTUS L'Heritier

(*Myrtaceæ*—*Leptospermeæ*—*Eucalyptinæ*)

Generic Description: For the present purpose it will be sufficient briefly to describe the genus as follows:

Evergreen trees and shrubs, with *bark* deciduous, or persistent, and then mostly fibrous; *leaves* simple, usually entire, commonly aromatic and glandular-punctate, with prominent intramarginal vein, mostly alternate and stalked, only in a few species persistently opposite and sessile; *flowers* in terminal corymbs or panicles, but more commonly axillary or lateral, and then mostly in umbels, rarely solitary; *ovary* inferior, several-celled, with axile placentation and numerous ovules; *stamens* numerous, usually inflected in bud; *anthers* opening either by parallel slits, or by terminal pores, or kidney-shaped; *petals*, and often also the *sepals*, apparently lacking and considered to be connate into the lid or *operculum* covering the stamens before anthesis.

Fruit a dry capsule with several cells that open at maturity by as many apical valves; *seeds* often few, but chaff usually plentiful.

Their nearest relation is *Angophora*, with distinct, free petals.

DIRECTIONS FOR USING THE KEY

While the key here given is really fairly simple and should be found very easy to use, it differs somewhat in form from those used in most botanical works, and a word of caution may not be out of place. The key is strictly dichotomous,

with two alternatives given under each numbered question, each of which should be read carefully to the end. Only then can a safe decision be made as to which alternative fits the plant in question.

An example may be given to illustrate how the key should be used and the name of one rather common species arrived at. Beginning with question number 1 in the left-hand column, we are asked whether the flowers of our plant are borne in terminal clusters or not. Answering this question in the affirmative we note the number given to the right of this alternative, in this case number 8. Finding this number in the left-hand column, we are asked about the size of the fruit and the venation of the leaves. Our species clearly fitting the description given under No. 8a., we now look for number 9 in the left-hand column. Since the capsules of our species are over 1 inch long, we proceed to number 10. A short, but careful consideration of this will show us that we have been dealing with the showy-flowered Scarlet Gum, *E. ficifolia*.

It may take a little longer to find the names of some of the other species, but no trouble should be experienced in the use of the key if the precautions given above are observed.

KEY TO THE SPECIES

(Nos. 1 to 7 to the primary groups.)

1a. Fls. ² mostly <i>terminal</i> , in <i>panicles</i> or <i>corymbs</i>	8
—b. Fls. <i>axillary</i> or <i>lateral</i> , mostly in <i>umbels</i> , or <i>solitary</i>	2
2a. Lvs. mostly <i>opposite</i> , even on the flowering branches.....	51
—b. Lvs. <i>alternate</i> , except occasionally on the young shoots.....	3
3a. Lvs. distinctly <i>paler beneath</i> ; or veins transverse and close, usually both.....	19
—b. Lvs. about the <i>same color</i> on <i>both sides</i> ; veins either obscure, or remote, or oblique, or longitudinal.....	4
4a. <i>Lid</i> of mature buds <i>longer</i> than <i>calyx-tube</i> ; valves often exerted..	29
—b. <i>Lid</i> <i>never exceeding</i> <i>calyx-tube</i> in length.....	5
5a. <i>Peduncles</i> <i>conspicuously flattened</i> , or very short, or none; buds and capsules sessile and angled, the last often to over $\frac{1}{3}$ " diam....	44
—b. <i>Peduncles</i> <i>not flattened</i> , but angled or terete and distinct; buds and capsules neither sessile nor angled.....	6

²Abbreviations used in the key:

' :: foot.	E. :: Eucalyptus.	lvs. :: leaves.
" :: inch.	fls. :: flowers.	occ. :: occasionally.
caps. :: capsule.	fr. :: fruit.	us. :: usually.
diam. :: diameter.	H. :: height.	var. :: variety.

- 6a. *Valves deeply sunk*; lid about as long as calyx; pedicels often long and slender; rim mostly thin. 58
- b. *Valves exerted* or near rim; lid or pedicels often short. 7
- 7a. *Lid of mature buds very short*, mostly not more than half as long as calyx-tube; caps. mostly globose or pear-shaped, with valves rarely protruding. 69
- b. *Lid of mature buds about as long as calyx-tube*; capsule mostly more or less conoid or cylindrical; valves often protruding. 83
- 8a. (1) *Fls. and caps. large*, the latter $\frac{3}{4}$ – $1\frac{1}{2}$ " long; lvs. mostly paler beneath, with veins transverse and close. 9
- b. *Fls. and caps. smaller*; caps. rarely over $\frac{1}{2}$ " long; lvs. evenly green on both sides, or if paler beneath, then veins oblique and remote. 12
- 9a. *Capsule over 1" long*; fls. often with reddish stamens. 10
- b. *Capsule less than 1" long*; stamens white or yellowish. 11
- 10a. *Seeds winged*, brown or red; stamens usually reddish or orange; capsule rarely urnshaped; small, commonly cultivated tree. *E. ficifolia*
- b. *Seeds not winged*, black; fls. white, rarely pinkish; caps. often urnshaped; medium-sized tree, rarely grown. *E. calophylla*
A. Fls. with pinkish stamens. *var. rosea*
- 11a. (9) *Lvs. paler beneath*; pedicels to over $\frac{1}{2}$ " long. *E. corymbosa*
- b. *Lvs. not paler beneath*; pedicels $\frac{1}{4}$ " long or less. *E. eximia*
- 12a. (8) *Bark smooth*, annually deciduous; lvs. often lemon-scented; lid hemispherical; anthers open by parallel slits. 13
- b. *Bark rough, persistent*; lvs. not lemon-scented; lid pointed; anthers open by terminal pores. 14
- 13a. *Lvs. strongly lemon-scented*; narrow, to 12-times as long as wide; capsule $\frac{3}{8}$ " long or less. *E. citriodora*
- b. *Lvs. not lemon-scented*, broader; caps. to $\frac{1}{2}$ " long. *E. maculata*
- 14a. (12) *Lvs. distinctly paler beneath*. *E. paniculata*
- b. *Lvs. evenly green* on both sides. 15
- 15a. *Lid longer than calyx*; valves slightly protruding. *E. siderophloia*
- b. *Lid not exceeding calyx*; valves scarcely protruding. 16
- 16a. *Capsule over $\frac{1}{4}$ " long*. 17
- b. *Capsule scarcely over $\frac{3}{16}$ " long*. 18
- 17a. *Pedicels short and stout*; buds and caps. often angled; fl.-clusters mostly lateral. 65
- b. *Pedicels long and slender*; neither buds nor caps. angled; bark hard, red. 62
- 18a. (16) *Lvs. mostly broad*, very rarely wholly narrow, glaucous; caps. widest at rim; bark gray, soft. *E. polyanthemus*
- b. *Lvs. always narrow*; caps. narrowed at mouth; bark hard, brownish. *E. crebra*
- 19a. (3) *Peduncle distinctly flattened*; buds and caps. often sessile, or angled, or both. 22
- b. *Peduncle scarcely flattened*; buds and caps. otherwise. 20
- 20a. *Lid exceeding calyx-tube*, long-pointed; bark fibrous, persistent. *E. marginata*
- b. *Lid not exceeding calyx*, more or less obtuse; bark deciduous. 21

- 21a. *Lid very short, slightly broader than calyx*; caps. streaked lengthwise; valves sunk.....**E. corynocalyx**
- b. *Lid as long and wide as calyx*; caps. not streaked; valves often near rim.....**E. diversicolor**
- 22a. (19) *Bark of trunk persistent*, usually fibrous..... 25
- b. *Bark of trunk deciduous*, smooth or nearly so..... 23
- 23a. *Lvs. densely gland-dotted*; lid usually short, as long as thick; caps. short, no longer than thick, with thick rim and 3 or 4 broadly triangular, wholly external valves.....**E. punctata**
A. Fls. and caps. large, the last to over $\frac{1}{4}$ " diam.....**E. punctata** var. **grandiflora**
- b. *Lvs. inconspicuously gland-dotted*; lid narrow; rim thin; valves usually 5, narrow, commonly sunk or partly protruding..... 24
- 24a. *Caps. glaucous*, shortly *pear-shaped*; valves protruding...**E. grandis**
- b. *Caps. not glaucous*, mostly more or less *cylindroid*; valves included...**E. saligna**
- 25a. (22) *Lid broader than calyx, obtuse*; lvs. only slightly paler beneath than above.....**E. gomphocephala**
- b. *Lid either pointed, or if obtuse, then no broader than calyx*..... 26
- 26a. Buds and caps. usually *stalked*, rarely sessile and angled; lid mostly long and pointed..... 27
- b. Buds and caps. shortly or *not stalked*, usually *angled*; lid short, scarcely pointed.....**E. botryoides**
- 27a. *Lvs. with veins oblique and remote*; caps. globose, narrowed to mouth, no longer than thick; valves rarely protruding.**E. pilularis**
- b. *Lvs. with veins transverse and close*; caps. hemispheric or cylindrical, either longer than thick, or widest at mouth..... 28
- 28a. *Lvs. to 2" wide or more*; caps. cylindrical; rim thin; valves little or not protruding.....**E. robusta**
- b. *Lvs. narrower*; caps. hemispheric; rim broad; valves exerted....**E. resinifera**
- 29a. (4) *Lid of mature buds 1" long or more*; valves permanently connate at apex..... 30
- b. *Lid shorter*, rarely over $\frac{1}{2}$ " long; valves free at maturity..... 31
- 30a. *Caps. connate*, to $\frac{3}{4}$ " diam.; valve-tips short; lvs. short, obtuse; shrub or small tree.....**E. lehmanni**
- b. *Caps. free*, less than $\frac{1}{2}$ " diam.; valve-tips long and slender; lvs. narrow, pointed; tall tree with hard, dark bark.....**E. cornuta**
- 31a. (29) *Peduncle flattened*, or very short or none; buds and caps. often sessile and angled..... 32
- b. Peduncles scarcely flattened, but distinct; buds and caps. stalked, rarely angled..... 36
- 32a. *Caps. about $\frac{1}{4}$ " long and as much in diam., top-shaped*; valves with awl-shaped tips.....**E. decipiens**
- b. *Caps. to $\frac{1}{3}$ " long or more*, mostly cylindrical, rarely globose..... 33
- 33a. *Caps. globose*, narrowed to rim; peduncle not over $\frac{1}{8}$ " wide.....**E. pilularis**
- b. *Caps. mostly cylindrical or urn-shaped*; peduncle to $\frac{1}{2}$ " wide or more..... 34

- 34a. *Lvs. broad, occ. obcordate*; buds and caps. angled, quite sessile. **E. platypus**
- b. *Lvs. narrow, pointed*; buds and caps. distinctly, if shortly stalked, never angled. 35
- 35a. *Peduncle* often only *slightly flattened*; pedicels slender; caps. more or less urn-shaped; juvenile lvs. broad. **E. occidentalis**
- b. *Peduncles* always *broad*, pedicels short and stout; caps. short-cylindric; juvenile lvs. narrow. **E. eremophila**
- 36a. (31) *Caps. to $\frac{1}{3}$ " diam. or more*; buds often correspondingly large; bark occ. persistent, often fibrous. 42
- b. *Caps. scarcely over $\frac{1}{4}$ " diam.*; bark mostly smooth and deciduous. 37
- 37a. *Caps. cylindrical*; valves protruding, *with narrow, awl-shaped tips* 38
- b. *Caps. hemispheric or top-shaped*; valves *broadly triangular*, fully exerted. 39
- 38a. (37 & 91) *Lvs. yellowish green*; bark *smooth*; lid little longer than calyx; caps. usually less than $\frac{1}{4}$ " diam., with thick rim. **E. salmonophloia**
- b. *Lvs. often glaucous*; bark occ. *rough*; lid to twice as long as calyx or more; caps. to over $\frac{1}{4}$ " diam.; rim often thin³. **E. oleosa**
- 39a. (37) *Lid to twice as long as calyx*, or acuminate; caps. $\frac{1}{4}$ " diam.; rim broad and convex, bearing valves at apex. 40
- b. *Lid shorter, never acuminate*; caps. *larger*; rim narrow; valves not quite at apex; bark persistent. **E. rudis**
- 40a. *Pedicels slender*, to 3 times as long as caps. or more; *lid* little longer than calyx, *acuminate*; small tree with spreading branches. **E. rostrata**
- b. *Pedicels shorter*; *lid* 2 to 3 times as long as calyx, *not acuminate*; tall, erect trees. 41
- 41a. *Buds short*, crowded, *almost sessile*; caps. less than $\frac{1}{4}$ " diam.; lvs. often *broad*, especially on seedlings and suckers. **E. amplifolia**
- b. *Buds narrow, long-stalked*; caps. to over $\frac{1}{4}$ " diam.; *lvs. usually narrow*, even on seedlings and suckers. **E. tereticornis**
- 42a. (36) *Caps. to over $\frac{1}{3}$ " long*; *pedicels to over $\frac{1}{3}$ " long*; umbels often only 3-flowered. 85
- b. *Caps., or pedicels, or both, shorter*; umbels always with more than 3 flowers. 43
- 43a. *Rim very prominent and convex*, often as broad as the rest of calyx-tube is long; lid beaked; bark fibrous; branches often long-pendulous; lvs. narrow; anthers with kidney-shaped pores. **E. macrorrhyncha**
- b. *Rim narrow or sharp*; lid not beaked; lvs. often broad; bark brittle; branches at most slightly drooping; anthers open by parallel slits. **E. rudis**
- 44a. (5) *Caps. $\frac{1}{2}$ " diam. or more*; buds to $\frac{1}{3}$ " diam. or more. 46
- b. *Caps not over $\frac{1}{3}$ " diam.*; buds scarcely over $\frac{1}{4}$ " diam. 45

³**E. longicornis** and **E. transcontinentalis** are segregates from this species and may be distinguished by their long lid, which is beaked in **E. transcontinentalis**, this species also having glaucous leaves and buds.

- 45a. *Lid* of mature buds *not over half length of calyx-tube*; caps. usually more or less globose or hemispheric. 69
- b. *Lid longer*, about *as long as calyx-tube*; caps. usually conoid or cylindrical. 83
- 46a. (44) Shrub, less than 10' tall; *lvs. broad, obtuse*; peduncles none; fls. in sessile clusters; buds warty, not glaucous. **E. alpina**
- b. Large or small trees; *lvs. narrow, pointed*; peduncles usually distinct, even if short; buds warty and glaucous, or smooth and green. 47
- 47a. *Buds and caps. usually warty and glaucous*; peduncles rarely over $\frac{1}{3}$ " long, slightly flattened or angled. 48
- b. *Buds and caps. neither warty nor glaucous*; peduncles often longer, mostly very broad. 49
- 48a. (47 & 55.) *Our most common species*; buds and caps. warty, mostly solitary, rarely in three's; caps. $\frac{1}{2}$ –1" diam., sharply angled; rim to over $\frac{1}{4}$ " wide. **E. globulus**
- A. Habit compact; branches all ascending from apex of short trunk; fls. all in three's, small. **var. compacta**
- b. *Rare*; buds slightly warty; caps. pitted, mostly in three's, slightly angled, $\frac{1}{3}$ to $\frac{1}{2}$ " diam.; rim narrower, light brown. **E. maideni**
- 49a. (47) *Lid much broader than calyx*, obtuse; umbels many-flowered; caps. longer than thick. **E. gomphocephala**
- b. *Lid pointed, scarcely any wider than calyx*; umbels 3-flowered; caps. often broader than long. 50
- 50a. *Peduncle* over $\frac{1}{2}$ " long, *much flattened*; caps. to 1" diam. or more. **E. megacarpa**
- b. *Peduncle* shorter, *slightly flattened*; caps. not over $\frac{1}{2}$ " diam. **E. mortoniana**
- 51a. (2) *Lvs. sessile*, with base stem-clasping and cordate. 52
- b. *Lvs. distinctly stalked*, rounded or tapering at base. 56
- 52a. *Trees*; with bark of trunk *persistent*, fibrous. 101
- b. *Shrubs*; or trees with *deciduous bark*. 53
- 53a. *Umbels many-flowered*; lid less than half the length of calyx-tube, not over $\frac{1}{8}$ " long. **E. risdoni**, see No. 76
- b. *Umbels* usually 3-flowered, or flowers solitary; lid longer. 54
- 54a. *Lvs. with margin* distinctly *crenulate*; caps. narrowed to rim; valves more or less sunk. **E. cordata**
- b. *Lvs. not crenulate*; caps. widest at apex; valves near rim. 55
- 55a. *Lvs. about as long as broad, obtuse*; young shoots terete or nearly so; caps. not over $\frac{1}{3}$ " diam. **E. pulverulenta**
- b. *Lvs. longer than broad, acute*; young shoots quadrangular or even winged; caps. over $\frac{1}{3}$ " diam. 48
- 56a. (51) *Caps. $\frac{1}{4}$ – $\frac{1}{3}$ " long*. 101
- b. *Caps. $\frac{3}{8}$ – $\frac{1}{2}$ " long* or more. 57
- 57a. *Lvs. glaucous*; calyx angled, slightly 4-lobed; caps. with 4 ridges; stamens apparently in 4 groups. **E. tetragona**
- b. *Lvs. brownish green*; calyx, stamens and caps. otherwise. **E. preissiana**
- 58a. (6) *Pedicels* long and slender, over $\frac{1}{4}$ " long, mostly exceeding calyx 59
- b. *Pedicels* short, rarely exceeding calyx or capsule. 63

- 59a. Caps. usually over $\frac{1}{4}$ " diam. 60
 —b. Caps. usually less than $\frac{1}{4}$ " diam. 68
- 60a. Caps. with rim external, sharp; staminal ring not persistent; lvs. to 12" long, bright green; bark persistent, fibrous; anthers open by parallel slits. *E. longifolia*, see No. 85a
 —b. Caps. with rim terminal, narrow, not to be confused with the often persistent staminal ring; lvs. shorter, often grayish; bark deciduous or hard; anthers open by terminal pores. 61
- 61a. Bark deciduous, leaving trunk smooth. *E. leucoxydon*
 A. Stamens purplish. var. *erythrostema*
 AA. Stamens whitish.
 B. Caps. not over $\frac{1}{3}$ " diam. (type.)
 BB. Caps. to $\frac{1}{2}$ " diam. var. *macrocarpa*
 —b. Bark persistent, rough. 62
- 62a. (17 & 61) Lvs. broad, mostly less than 3 times as long as wide, glaucous; fls. mostly in panicles; caps. longer than thick, much narrowed at mouth. *E. caleyi*
 —b. Lvs. narrower, dull gray-green; fls. only rarely appearing paniced; caps. as long as thick, scarcely contracted at mouth; bark deeply furrowed, almost black. *E. sideroxydon*
 A. Stamens pinkish. var. *rosea*
- 63a. (58) Umbels always 3-flowered; peduncle often recurved; lid less than half length of calyx. *E. urnigera*
 —b. Umbels mostly many-flowered; peduncle not recurved; lid mostly longer. 64
- 64a. Lvs. dark green, markedly oblique at base; bark thick, fibrous; caps. usually narrowed to mouth; rim often thick; anthers kidney-shaped. 80
 —b. Lvs. dull-green, not oblique at base, but occasionally falcate; bark deciduous or thin; caps. not narrowed to rim; anthers open by pores. 65
- 65a. (17 & 64) Caps. $\frac{1}{4}$ – $\frac{1}{3}$ " long. 66
 —b. Capsules scarcely over $\frac{1}{4}$ " long. 67
- 66a. Umbels solitary; caps. to $\frac{1}{3}$ " long; lvs. and buds glaucous. *E. albens*
 —b. Umbels mostly paniced, even though lateral; caps. less than $\frac{1}{3}$ " long; lvs. and buds not glaucous. *E. hemiphloia*
- 67a. (65) Buds often short-stalked and angled; caps. more or less cylindroid. *E. odorata*
 —b. Buds mostly long-stalked, not angled; caps. hemispheric. 68
- 68a. (59 & 67) Capsules mostly with 5–6 valves, cylindroid, slightly angled, occ. appearing paniced; lvs. rigid; branches only slightly drooping; inner bark white. *E. bosistoana*
 —b. Caps. mostly 4-celled, hemispheric, not angled, nor paniced; lvs. short, soft; habit drooping; inner bark yellow. *E. melliodora*
- 69a. (7) Fls. always in three's; caps. cylindroid or urnshaped; valves sunk or even with rim; rim narrow; anthers open by parallel slits. 90
 —b. Umbels with 5 or more fls.; caps. hemispheric or pearshaped; rim occ. thick; valves near rim; anthers kidney-shaped. 70

- C. Juvenile lvs. broad, glaucous, often even on old trees; buds often glaucous.....**var. dives**
- CC. Juvenile lvs. broad or narrow, not glaucous; buds not glaucous.....
- D. Juvenile lvs. broad, green, adult lvs. thick and shining.....**var. nitida**
- DD. Juvenile lvs. narrow.....
- E. Lid mucronate.....**var. radiata**
- EE. Lid obtuse.....(type)
- 79a. *Lvs. to over 1" wide*, very oblique at base and falcate; peduncle scarcely flattened; bark softly fibrous..... 81
- b. *Lvs. less than 1" wide*, falcate but hardly oblique at base; peduncle flattened; bark hard, not fibrous.....**E. sieberiana**
- 80a. (64) *Lid conical; caps. globose*, nearly sessile, densely crowded, narrow-mouthed; lvs. narrow, scarcely oblique at base, with veins transverse..... 82
- b. *Lid hemispheric; caps. pear-shaped*, distinctly stalked, scarcely crowded, little narrowed at mouth; lvs. broad, very oblique at base, with veins longitudinal..... 81
- 81a. (75, 79, 80.) *Bark persistent; umbels mostly solitary*; rim thin; valves sunk; lvs. with oil-dots remote.....**E. obliqua**
- b. *Bark persists only rarely* at base of trunk; *umbels mostly paired* in the leaf-axils; rim thick, not depressed; valves scarcely sunk; lvs. with many crowded oil-dots.....**E. regnans**
- 82a. (77, 80, 99) *Lvs. peppermint-scented*, with rather oblique veins, *young growth smooth*; bark persists only on trunk and larger branches; caps. often small, usually narrowed to the mostly narrow rim; valves included.....**E. piperita**
- b. *Lvs. not peppermint-scented*, with veins more transverse than in last; *young growth rough or hairy*; bark persists even on the smaller branches; caps. to $\frac{1}{8}$ " diam.; rim usually thick, flat or convex; valves near rim.....**E. eugenioides**
- 83a. (7, 45) *Caps. relatively large, to $\frac{3}{8}$ " long*, their diam. as much or more..... 84
- b. *Caps. relatively smaller and shorter*..... 87
- 84a. *Pedicels long* and slender; caps. scarcely angled..... 85
- b. *Pedicels short* and stout; caps. slightly angled.....**E. mortoniana**
- 85a. (42 & 84) *Lid acuminate; lvs. to 12" long* or more; tall tree with fibrous bark; stamens yellowish; rim external; valves scarcely protruding.....**E. longifolia**
- A. Umbels with many flowers.....**var. multiflora**
- b. Lid obtuse or nearly so; *lvs. rarely over 3" long*; shrub or small tree.. 86
- 86a. *Stamens reddish; buds elongated*; caps. conoid, flat-topped; rim narrow; valves scarcely protruding.....**E. erythronema**
- b. *Stamens not colored; buds and caps. globose* or nearly so, the latter with prominent, convex rim and exerted valves..**E. drummondii**
- 87a. (83) *Bark mostly persistent*..... 95
- b. *Bark mostly deciduous*..... 88

- 88a. *Lvs.* to over 2" wide, obtuse, long-stalked. **E. alba**
 —b. *Lvs.* narrow, pointed. 89
- 89a. *Lvs.* mostly 3" long or less; lid markedly shorter than calyx-tube; umbels always 3-flowered. 90
 —b. *Lvs.* mostly 4" long or more; lid about as long as calyx-tube; umbels more often many-flowered (except in the common **E. viminalis**) . . . 91
- 90a. (69 & 89) Plant scarcely glaucous; caps. often urn-shaped; valves sunk; lid less than half length of calyx-tube; pedicels to $\frac{1}{4}$ " long; peduncles often recurved. **E. urnigera**
 —b. Plant usually glaucous; caps. hemispheric; valves near rim; lid relatively longer; pedicels shorter. **E. gunni**
- 91a. (89) Style persistent in fruit, forming awl-shaped tips to the valves . . . 38
 —b. Style not prominently persistent; valves without needle-like tips . . . 92
- 92a. Caps. obconic or top-shaped, narrower than the rim, tapering very gradually to pedicel. **E. ovata**
 —b. Caps. otherwise, more or less hemispheric, abruptly tapering to pedicel. 93
- 93a. *Lvs.* often glaucous, of seedlings and suckers broad; buds many in the umbels, often glaucous; caps. occ. somewhat urn-shaped; rarely cultivated. **E. rubida**
 —b. *Lvs.* not glaucous, narrow even in the juvenile stage; umbels often 3-flowered; buds and caps. not glaucous, the latter hemispheric . . . 94
- 94a. Rarely cultivated; umbels mostly many-flowered; lid hemispheric, obtuse; rim usually narrow; valves often only partly protruding **E. maculosa**
 —b. Commonly grown; umbels mostly 3-flowered; lid conic, short-pointed; rim mostly broad and convex; valves mostly fully exerted. **E. viminalis**
- 95a. (87) Mature buds and caps. very small, scarcely over $\frac{1}{8}$ " long; buds shining brown; bark brown, fibrous. **E. macarthuri**
 —b. Buds and caps. larger, to $\frac{1}{4}$ " long or more, usually green or glaucous 96
- 96a. Pedicels long and slender, even in fruit. 97
 —b. Pedicels none, or very short and stout, at least in fruit. 99
- 97a. Valves widely exerted; rim broad. 98
 —b. Valves included; rim narrow, but staminal ring often persistent. **E. melliodora**
- 98a. Lid shorter than calyx-tube; caps. less than $\frac{1}{4}$ " diam.; anthers kidney-shaped; rarely cultivated. **E. smithi**
 —b. Lid as long or longer than calyx-tube; caps. to over $\frac{1}{4}$ " diam.; anthers open by parallel slits; common in cultivation. . . **E. rudis**
- 99a. (96) Lid narrow, acuminate; caps. globose; valves scarcely protruding; anthers kidney-shaped. 82
 —b. Lid broad, obtuse or acutish; caps. conoid, hemispheric or cylindrical; valves often exerted; anthers open by parallel slits. 100
- 100a. Buds and caps. mostly quite sessile and often more or less glaucous 101
 —b. Buds and caps. usually distinctly, even if shortly, stalked, scarcely glaucous; bark only rarely persistent. **E. viminalis**

- 101a. (52, 56, 100) Lvs., buds and fruits usually glaucous; buds and *caps.* scarcely angled; *peduncle* not conspicuously flattened; valves often somewhat protruding; bark reddish-brown. **E. cinerea**
 A. Umbels with 5 or more flowers; lvs. often opposite. **var. multiflora**
 —b. Lvs., buds and fruits grayish-green, only rarely glaucous; buds and *caps.* angled, strictly *sessile* on the much flattened *peduncle*; valves usually not protruding; bark grayish-brown. **E. elæophora**

ALPHABETICAL LIST OF SPECIES IN KEY

Accepted specific names in bold face type; *synonyms* in italics; author of specific or varietal name, common name, range and maximum height in California in roman type.

In giving the range the following abbreviations are used:
 N.A., :: North Australia; N.S.W., :: New South Wales;
 Qu., :: Queensland; S.A., :: South Australia; Tas., :: Tasmania; W.A., :: West Australia.

Height in feet, to convert into meters, divide by three.

× :: growing in Golden Gate Park, San Francisco.

- acervula* Hooker, :: **E. ovata** Labillardiere.
alba Reinwardt, (*E. platyphylla* F. v. Mueller.) "Poplar Gum."
 Qu., Java, Timor, Papua. H. 25
 × **albens** Miquel, (*E. hemiphloia* var. *albens* F. v. Mueller.) "White Box." V., N. S. W., Qu. H. 20
 × **alpina** Lindley. V. H. 12
 × **amplifolia** Naudin, (*E. tereticornis* var. *amplifolia* ?) "Cabbage Gum." N. S. W., Qu. H. 40
amygdalina Labillardiere.
 × — **var. angustifolia** F. v. Mueller, (*E. linearis* Dehnhardt.) "White Gum." Tas. H. 30
 — **var. dives** F. v. Mueller, (*E. dives* Schauer.) "Blue Peppermint." V., N. S. W.
 — **var. nitida** Benth., (*E. nitida* Hooker.) N. S. W., Tas.
 × — **var. numerosa** Maiden, (*E. numerosa* Maiden, *E. andreana* Naudin.) "Peppermint Gum." V., N. S. W. H. 40
 — **var. radiata** Benth., (*E. radiata* Sieber.) "Peppermint." V., N. S. W.
 — **var. regnans** F. v. Mueller, :: **E. regnans** F. v. Mueller.
andreana Naudin, :: **E. amygdalina** var. *numerosa* Maiden.
angustifolia Auct., :: **E. amygdalina** var. *angustifolia* F. v. Mueller.
bosistoana F. v. Mueller. "Bosisto's Box." V., N. S. W. H. 25
 × **botryoides** Smith. "Bastard Mahogany." V., N. S. W., Qu. H. 60
cajuputea Miquel, :: **E. odorata** Behr & Schlechtendal.
caleyi Maiden, (*E. sideroxylon* var. *pallens* Benth.) "Broad-leaved Iron-bark." N. S. W. H. 15

<i>calophylla</i> R. Brown. "Red Gum." W. A.....	H. 40
— <i>var. rosea</i> Hort.	
<i>cambagei</i> Deane & Maiden, :: <i>E. elæophora</i> F. v. Mueller	
× <i>cinerea</i> F. v. Mueller, (<i>E. pulverulenta</i> F. v. Mueller, non Sims; <i>E. pulverulenta var. lanceolata</i> Howitt; <i>E. stuartiana</i> Auct. Hort. Calif.); "Blue-leaved Apple." N. S. W., Qu.....	H. 40
× — <i>var. multiflora</i> Maiden, (<i>E. pulverulenta</i> F. v. Mueller, in part; <i>E. stuartiana</i> F. v. Mueller, in part).	
<i>citriodora</i> Hooker, (<i>E. maculata var. citriodora</i> F. v. Mueller.) "Lemon-scented Gum." Qu.....	H. 40
<i>cladocalyx</i> F. v. Mueller, :: <i>E. corynocalyx</i> F. v. Mueller.	
× <i>coccifera</i> Hooker. Tas.....	H. 25
<i>collosa</i> F. v. Mueller, :: <i>E. diversicolor</i> F. v. Mueller.	
<i>conoidea</i> Benth., :: <i>E. erythronema</i> Turczaninow.	
× <i>cordata</i> Labillardiere. Tas.....	H. 25
× <i>coriacea</i> A. Cunningham (<i>E. pauciflora</i> Sieber.) "Tumble-down Gum." V., S. A., N. S. W.....	H. 30
× <i>cornuta</i> Labillardiere. "Yate." W. A.....	H. 50
— <i>var. lehmanni</i> Auct. (?), :: <i>E. lehmanni</i> Preiss.	
— <i>var. symphiocarpa</i> Auct., :: <i>E. lehmanni</i> Preiss.	
<i>corymbosa</i> Smith "Bloodwood." N. S. W., Qu.....	H. 20
× <i>corynocalyx</i> F. v. Mueller, (<i>E. cladocalyx</i> F. v. Mueller.) "Sugar Gum." S. A., V.....	H. 40
<i>crebra</i> F. v. Mueller. "Narrow-leaved Iron-bark." N. S. W., N. A., Qu.....	H. 50
<i>decipiens</i> Endlicher. "Swamp Gum." W. A.....	H. 20
× <i>diversicolor</i> F. v. Mueller, (<i>E. collosa</i> F. v. Mueller.) "Karri." W. A.....	H. 60
<i>dives</i> Schauer, :: <i>E. amygdalina var. dives</i> F. v. Mueller.	
<i>drummondi</i> Benth., (<i>E. oldfieldi var. drummondi</i> Maiden) W. A.	H. 10
× <i>elæophora</i> F. v. Mueller, (<i>E. cambagei</i> Deane & Maiden, <i>E. gonio-calyx</i> Auct.) "Bastard Box." S. A., V., N. S. W.....	H. 40
<i>eremophila</i> Maiden, (<i>E. occidentalis var. eremophila</i> Diels.) "Mal-lee." W. A.....	H. 12
× <i>erythronema</i> Turczaninow. (<i>E. conoidea</i> Benth.) W. A.....	H. 15
× <i>eugenioides</i> Sieber. "Stringy Bark." V., N. S. W., Qu.....	H. 40
<i>eximia</i> Schauer. "Yellow Bloodwood." N. S. W.....	H. 30
<i>fastigiata</i> Deane & Maiden, :: <i>E. regnans</i> F. v. Mueller, in part ?)	
× <i>ficifolia</i> F. v. Mueller. "Scarlet-flowering Eucalypt." W. A.....	H. 25
<i>fissilis</i> F. v. Mueller, :: <i>E. obliqua</i> L'Heritier.	
<i>floribunda</i> Huegel, :: <i>E. marginata</i> Smith.	
<i>gigantea</i> Hooker, :: <i>E. obliqua</i> L'Heritier, in part only.	
× <i>globulus</i> Labillardiere. "Blue Gum." Tas., V., N. S. W.....	H. 120
× — <i>var. compacta</i> Hort. Calif. "Compact Blue Gum.".....	H. 60
<i>gomphocephala</i> A. P. DeCandolle. "Tooart." W. A.....	H. 30
<i>goniocalyx</i> Hort. Calif. & Auct., :: <i>E. elæophora</i> F. v. Mueller.	
<i>gracilipes</i> Naudin, :: <i>E. leucoxydon</i> F. v. Mueller.	
<i>grandis</i> (Hill.) Maiden, (<i>E. saligna var. pallidivalvis</i> Baker & Smith.) "Flooded Gum." N. S. W., Qu.....	H. 70

- gunni* Hooker. "Cider Gum." ? H. 20
gunni Hort. Calif. & Auct., :: *E. ovata* Labillardiere.
 — *var. acervula* Deane & Maiden, :: *E. ovata* Labillardiere.
 — *var. undulata* Luehm. & Auct., :: *E. ovata* Labillardiere, (??)
hæmastoma Smith "White Gum." Qu., N. S. W., Tas. H. 20
 X — *var. capitata* Maiden.
 X — *var. micrantha* Benth., (*E. micrantha* DeCandolle.) N. S. W., Qu. H. 20
hemiphloia F. v. Mueller. "Black Box." N. S. W., Qu. H. 30
 — *var. albens* F. v. Mueller, :: *E. albens* Miquel.
 X *lehmanni* Preiss. (*E. cornuta* *var. lehmanni* Auct., *E. macrocera* Turczaninow, *E. cornuta* *var. symphiocarpa* Auct.) "Bushy Yate." W. A. H. 20
 X *leucoxydon* F. v. Mueller. (*E. gracilipes* Naudin; *E. sideroxydon* F. v. Mueller, in part.) "White Gum." S. A., V., N. S. W. H. 30
 X — *var. erythrostroma* F. v. Mueller. (*E. leucoxydon* *var. purpurea* Hort.)
 — *var. purpurea* and *var. rosea* Hort, see preceding variety.
linearis Dehnhardt, :: *E. amygdalina* *var. angustifolia* F. v. Mueller.
longicornis F. v. Mueller, see *E. oleosa* F. v. Mueller.
 X *longifolia* Link & Otto. "Woolly Butt." N. S. W., V. H. 50
 — *var. multiflora* Maiden.
 X *macarthuri* Deane & Maiden. "Camden Woolly Butt." N. S. W. H. 40
macrocera Turczaninow, :: *E. lehmanni* Preiss.
 X *macrorrhyncha* F. v. Mueller. "Red Stringy Bark." V., S. A., N. S. W., Qu. H. 30
maculata Hooker. "Spotted Gum." N. S. W., Qu. H. 30
 — *var. citriodora* F. v. Mueller, :: *E. citriodora* Hooker.
maculosa R. T. Baker. "Spotted Gum." N. S. W., V. H.
maideni F. v. Mueller. "Blue Gum." V., N. S. W. H. 30
marginata Smith. (*E. floribunda* Huegel.) "Jarrah." W. A. H. 30
 X *megacarpa* F. v. Mueller. W. A. H. 25
 X *melliodora* A. Cunningham. "Yellow Box." V., N. S. W., Qu. H. 30
micrantha DeCandolle, :: *E. hæmastoma* *var. micrantha* Benth.
 X *mortoniana* A. Kinney. (*E. maideni* Auct., doubtful if F. v. Mueller's; *E. ovata* *var. grandiflora* Maiden, ?) [see appendix, page 84] H. 60
montana Auct., :: *E. gunni* Hooker. (?)
nitida Hooker, :: *E. amygdalina* *var. nitida* Benth.
numerosa Maiden, :: *E. amygdalina* *var. numerosa* Maiden.
obcordata Turczaninow, :: *E. platypus* Hooker.
 X *obliqua* L'Heritier, (*E. fissilis* F. v. Mueller, *E. gigantea* Hooker, in part.) "Mess-mate," "Stringy Bark." S. A., V., N. S. W., Tas. H. 50
obtusiflora DeCandolle, (*E. virgata* *var. obtusiflora* Maiden.) N. S. W. H. 15
 X *occidentalis* Endlicher, "Flat-topped Yate." W. A. H. 10
 — *var. eremophila* Diels, :: *E. eremophila* Maiden.
odorata Behr & Schlechtendal. "Peppermint." S. A., N. S. W., V. H. 15

- oldfieldi* var. *drummondii* Maiden, :: *E. drummondii* Benth.
- oleosa* F. v. Mueller. "Mallee." W. A., S. A., V., N. S. W..... H. 10
- ×*ovata* Labillardiere, (*E. acervula* Hook., *E. gunni* Auct.) "Swamp Gum." V., S. A., N. S. W., Tas..... H. 60
- var. *grandiflora* Hort. Calif., :: *E. mertoniana* A. Kinney.
- ×*paniculata* Smith. "Iron Bark." V., N. S. W., Qu..... H. 40
- *pauciflora* Sieber, :: *E. coriacea* A. Cunningham.
- pilularis* Smith. "Black Butt." V., N. S. W., Qu..... H.
- piperita* Smith. "Peppermint." N. S. W..... H. 20
- platypus* Hooker, (*E. obcordata* Turczaninow.) W. A..... H.
- ×*polyanthemus* Schauer. "Red Box." S. A., V., N. S. W..... H. 50
- preissiana* Schauer. W. A..... H. 8
- ×*pulverulenta* Sims. (*E. cinerea* F. v. Mueller and Hort. Calif., in part.) "Argyle Apple." N. S. W..... H. 15
- ×*punctata* DeCandolle. "Gray Gum." N. S. W..... H. 60
- var. *grandiflora* Deane & Maiden.
- radiata* Sieber, :: *E. amygdalina* var. *radiata* Benth.
- ×*regnans* F. v. Mueller, (*amygdalina* var. *regnans* F. v. Mueller, *E. fastigiata* Deane & Maiden, in part. ?) "Giant Gum." V., N. S. W., Tas..... H. 50
- ×*resinifera* Smith. "Red Mahogany." N. S. W., Qu..... H. 30
- risdoni* Hooker. Tas..... H. 40
- var. *elata* Benth.
- ×*robusta* Smith. "Swamp Mahogany." N. S. W., Qu..... H. 40
- ×*rostrata* Schlechtendal. "Red Gum." W. A., S. A., N. A., N. S. W., V., Qu..... H. 75
- ×*rubida* Deane & Maiden, (*E. gunni* Auct. & Hort.) "Manna Gum." S. A., V., N. S. W., Qu., Tas..... H. 40
- ×*rudis* Endlicher. "Swamp Gum." W. A..... H. 40
- ×*saligna* Smith. "Blue Gum." N. S. W., Qu..... H. 40
- var. *pallidivalvis* Baker & Smith, :: *E. grandis* (Hill) Maiden.
- salmonophloia* F. v. Mueller. "Salmon-bark Gum." W. A..... H. 25
- siderophloia* Benth. "Broad-leaved Iron-bark." N. S. W., Qu. H.
- ×*sideroxylon* A. Cunningham, (*E. leucoxydon* var. *sideroxylon* Auct.) "Red Iron-bark." V., N. S. W., Qu..... H. 30
- var. *pallens* Benth., :: *E. caleyi* Maiden.
- var. *rosea* Hort.
- ×*sieberiana* F. v. Mueller. "Mountain Ash." V., N. S. W., Tas... H. 20
- smithi* R. T. Baker, (*E. viminalis* var. *pedicellaris* F. v. Mueller.) *stuartiana* Auct. & Hort. Calif., :: *E. cinerea* F. v. Mueller.
- tereticornis* Smith. "Forest Red Gum." V., N. S. W., Qu., Papua H. 40
- tetragona* F. v. Mueller. W. A..... H. 15
- transcontinentalis* Maiden; see note under *E. oleosa* F. v. Mueller.
- undulata* Luehm., :: *E. ovata* Labillardiere ?
- ×*urnigera* Hooker. Tas..... H. 30
- ×*viminalis* Labillardiere. "White Gum." S. A., V., N. S. W., Qu. H. 70
- var. *pedicellaris* F. v. Mueller, :: *E. smithi* R. T. Baker.
- virgata* var. *obtusiflora* Maiden, :: *E. obtusiflora* Maiden.

ADDITIONAL SPECIES REPORTED AS IN CALIFORNIA

The following either have been reported at various times as grown in California, or seed has been offered. No opinion can be expressed as to the correctness of these names until sufficient material for their determination becomes available.

abergiana	×fastigiata	pellita
acaciæformis	foecunda	planchoniana
acacioides	forrestiana	populifolia
accedens	×gigantea	propinqua
×acmenioides	×goniocalyx	×pyriformis
×affinis	guilfoylei	quadrangulata
×algeriensis	howittiana	×rariflora
angulosa	incrassata	raveretiana
astringens	jacksoni	redunca
baileyana	jugalis	salubris
×baueriana	×kirtoniana	santalifolia
bicolor	×lævopinea	sepulcralis
×blaxlandi	leptophleba	×stellulata
buprestium	leptopoda	stowardi
cæsia	le souefi	stricklandi
camphora	longicornis	stricta
canaliculata	macrocarpa	stuartiana (true)
×capitellata	melanophloia	tessellaris
×consideniana	microcorys	×tetraptera
corrugata	microtheca	todtiana
cosmophylla	miniata	torquata
×crucis	×muelleriana	trabuti
dealbata	nutans	transcontinentalis
doratoxylon	oldfieldi	umbra
drepanophylla	×patens	virgata
erythrocorys	patentinervis	

APPENDIX

Note on an interesting form of *Eucalyptus*
grown in California.

While preparing this key to the species of *Eucalyptus* cultivated in California, some difficulty was experienced in differentiating clearly a tree variously known as *E. mortoniana*, *E. maideni* and *E. ovata* var. *grandiflora*. This multiplicity of names seems to indicate some doubt as to its correct determination, and without presuming to express any definite opinion as to its ultimate systematic position, the writer considers it advisable to here briefly discuss and describe it.

Eucalyptus sp. (?)

Medium-sized to large tree, to 20 meters tall or more. *Branches* ascending and spreading, drooping at their extremities; *bark* deciduous annually in thin strips except at base of trunk where it persists and becomes more or less thick, rough and fibrous; *juvenile leaves* opposite on quadrangular- or even winged stems, very shortly stalked, ovate, acute, cordate at base, green or rarely very slightly glaucous, 35-45 mm. long by 25-35 mm. broad, thinnish; *adult leaves* alternate, long-stalked, lanceolate, falcate, flat, rather thick, evenly green on both sides, 10-30 cm. long by 2-3.5 cm. wide, with the lateral veins remote and spreading from the midrib at an angle of about 40-45 degrees, intramarginal vein distant from the slightly thickened edge; *umbels* solitary in the leaf-axils, as far as known always three-flowered; *peduncle* flattened, 0.8-1 cm. long; *buds* shining green, smooth or nearly so; *calyx-tube* obconic or funnel-form, widest at juncture with lid and tapering gradually and uniformly to the indistinct, short and thick pedicel; *operculum* often seen to be double, varying from hemispheric to conic, obtuse or more often obtusely acuminate; *flowers* 0.8-1.1 cm. diameter; *stamens* whitish, inflected in bud; *anthers* opening by parallel slits; *capsule* shortly pedicelled, dark shining green, changing to brown when dry, very indistinctly glandular-roughened, cylindro-conic, 1-1.2 cm. in diameter, slightly longer; *rim* double, 0.2 cm. wide or less, usually flat, but often concave, or at times even slightly convex; *valves* usually 4, scarcely protruding, their broad base

sunk and their narrow tips about even with the rim; *seeds* not winged, fertile black, angular, sterile light brown, narrow; *seedlings* uniform, very vigorous.

This description is based on fresh material from a tree growing in Golden Gate Park, San Francisco, California, on the Main Drive near the Tennis Courts. The material from Santa Monica is practically identical with this except for the perhaps more acuminate lid of the smooth buds and the slightly more convex rim. Both these trees may well have been grown from the same lot of imported seed. The tree in Golden Gate Park appears to be about 45 years old, and specimens of both *E. globulus* and *E. ovata* of about the same age and height are growing in its vicinity. In general appearance it resembles *E. globulus* rather than *E. ovata*. From seed of this tree a large number of seedlings have been raised and its wider dissemination may be hoped for. It is not improbable that this form is represented in California by other individuals, and the writer would welcome any information in the matter.

This species or form may first be compared with *E. mortoni*-*ana* A. Kinney, described in "*Eucalyptus*," 1895, p. 193, illustration in back of volume. The writer has not seen any material named by Kinney, but his plate seems to show a form identical with the tree in Golden Gate Park, as well as with specimens from Santa Monica in the herbarium of the California Academy of Sciences. Kinney's description also fits fairly well, but might apply even better to a tree, apparently typical *E. maideni*, growing in Balboa Park, San Diego. Especially the comparison of the capsule to a kettle of some thick fluid boiling over, as suggested by the thick, brown rim of the fruit of the San Diego tree, is very apt. Comparison with a large series of *E. maideni* collected in its natural range may show this to be sufficiently variable to permit our material to be included in it; and the writer would be so inclined but for Maiden's reference of the local tree to *E. ovata* var. *grandiflora*.

Maiden in his "Revision," page 256, refers the form here discussed to *E. maideni* F. v. Mueller, basing his opinion on sheet No. 237,908 of the U. S. National Museum, not seen by the present writer. Figure 8, plate 80 of the *Revision* resem-

bles our form only slightly and may well have been typical *E. maideni*.

Material from the tree in Golden Gate Park sent to J. H. Maiden by Miss Alice Eastwood was determined by him as *E. ovata grandiflora* Maiden.

This uncertainty is certainly very suggestive.

Von Mueller's description of *E. maideni* may well be taken to cover the trees in question, but that species seems to differ from the California trees as follows:

Juvenile leaves very glaucous, sessile or nearly so; *buds* mostly more or less warty, glaucous, strongly angled; *capsules* hemispheric; *rim* broad, usually convex, brown; *valves* usually broadly triangular, often exserted.

E. ovata var. *grandiflora* Maiden, resembles our material only slightly, and mainly in the buds and fruits; it differs as follows:

Juvenile leaves soon alternate and stalked, rotund, obtuse, scarcely glaucous, on terete stems; *mature leaves* ovate to ovate-lanceolate, undulate, thin; *umbels* usually many-flowered; *pedicels* as a rule long and slender; *buds* not angled; *capsules* conoid or goblet-shaped, with *rim* markedly larger than calyx-tube, and *valves* rather narrow.

Figure 2, plate 113 of Maiden's "*Revision*" nevertheless suggests our material, even if faintly. As at least the general range of *E. ovata* coincides in part with that of *E. maideni* and *E. globulus*, the hint of hybridism may perhaps be permitted. The specimens from Santa Monica have quite smooth buds with sharply pointed lids.

E. globulus Labillardiere, as grown in California, usually differs much more in its *juvenile leaves* being very glaucous, its *umbels* only rarely 3-flowered or peduncled, the *buds* very warty and glaucous and very strongly angled; *capsules* very large, with wide rim and broad valves.

To judge from the juvenile foliage alone, the tree in question appears to be much more closely related to *E. maideni* or *E. globulus* than to *E. ovata*, the resemblance to the latter being confined to the buds and fruits. As the Californian trees were most likely grown from Australian seed, actual field-observations in the native home of the various species are needed to show whether the hybrid theory is at all tenable.

An interesting sidelight is cast on the subject by Kinney's report of some test-distillations made by S. M. Woodbridge, who obtained from 1000 lbs. of green leaves of *E. globulus* 134.8 oz. of oil as against 10.9 oz. in the case of *E. mertoniana*.

In conclusion, the writer offers the suggestion that the name *E. mertoniana* Kinney may well be restored for the local form, as it seems to differ more from *E. maideni* F. v. Mueller than does that from *E. globulus* Labillardiere. It would seem that if *E. maideni* is really so variable as to include the California form here discussed, it should itself be merged with *E. globulus*. Until further observations throw new light on the matter that may well rest here for the time being, and if these lines should stimulate enough interest to lead to further investigations they will have served their purpose.

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